

A New Species of *Solenophora* (Gesneriaceae) from Southeast Veracruz, Mexico

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RESUMEN. Se describe e ilustra *Solenophora tuxtensis* (Gesneriaceae, Gesnerioideae), una nueva especie de Veracruz, México. Las características más evidentes para distinguir esta especie son el cáliz muy largo y tubular, la corola con máculas púrpuras en los lóbulos y una glándula nectarífera bilobulada. *Solenophora tuxtensis* es conocida solamente de la región de Los Tuxtlas, Veracruz.

ABSTRACT. *Solenophora tuxtensis* (Gesneriaceae, Gesnerioideae), a new species from Veracruz, Mexico, is described and illustrated. The most prominent features distinguishing this species are the long tubular calyx, and the corolla with dark purple spots on the lobes and only one bilobed nectariferous disc gland. It is known only from the Los Tuxtlas region, Veracruz.

Solenophora Benthham is a neotropical genus in the tribe Gloxinieae (Fritsch) Wiehler (Wiehler, 1983), and has about 15 species occurring from Mexico to Panama (Gibson, 1974; Skog, 1979). Similar to other genera in the family, this genus is poorly collected in Mexico and needs to be revised. About six species in the genus have been collected in Mexico in the states of Chiapas, Oaxaca, Puebla, and Veracruz.

During preparation of a floristic study of the "Los Tuxtlas" Biological Station in Veracruz, Ibarra-Manríquez and Sinaca (1987) collected material of *Solenophora* that corresponded to specimens provisionally named as *Solenophora* "tuxtla" by Dale Denham. An examination of herbarium material from MEXU and US and the literature about this genus revealed to us that the Denham species is worthy of publication.

Solenophora tuxtensis Ramírez-Roa & Ibarra-Manríquez, sp. nov. TYPE: México. Veracruz: Mpio. San Andrés Tuxtla, Estación de Biología Tropical Los Tuxtlas, Lote 71, 18°34'–36'N, 95°05'–09'W, 400 m, 18 ene. 1991, G. Ibarra & S. Sinaca 3533 (holotype, MEXU; isotypes, BM, ENCB, F, K, LE, MO, US, XAL). Figure 1.

Planta terrestris suffrutescens vel frutex erectus, ramosus; caulis pilosus, folia opposita longipetiolata, herbacea, laxa, pilosa, lamina elliptica; petioli axillari 1–2; calyx 2.6–4.1 cm longus, subcampanulatus flavescens, limbus breviter 5-lobatus, lobi deltoidei serrati; corolla cylindrica, flava, tubus intus purpureo-maculatus, lobi purpureo-maculati; stamina epicorollina, antherae apice connatae; stigma stomatomorphum; ovarium inferum pilosum; discus e glandula bilobata formatus; capsula calyce accrescenti; semina elliptica.

Suffrutescent herbs or shrubs 1.5–2.5 m tall; internodes pubescent, trichomes multicellular, 0.5–1 mm long, more conspicuous in younger parts. Leaves opposite, simple, elliptic, rarely narrowly elliptic or ovate, 3.5–25 × 1.8–14 cm, 1.5–3 times longer than wide, the base oblique, the apex acute or cuspidate, biserrate, membranous, upper surface dark green, pilose, trichomes 1–2 mm long, lower surface light green or frequently reddish, pilose along the costa and secondary veins, 6–9 secondary veins, pinnate; petiole 1.5–13 cm long, sparsely pilose, reddish above. Peduncle reddish, 2.5–7 cm long, pilose; bracts 2, linear, 0.4–1.2 cm long, green, pilose. Flowers showy, 1–2 in each axil; floral tube turbinate, 6–9 × 3–6 mm, red at the base, yellowish at the apex; calyx erect, slightly campanulate, 2.6–4.1 cm long, yellow; tube 1.5–3.3 × 0.8–1.5 cm, reddish tomentose; 5 lobes triangular, 2–8 × 2–8 mm long and wide, margin serrate and pubescent, trichomes ca. 1 mm long; corolla tubular, slightly broader toward the apex, 4.3–6 cm long, yellow, with dark purple spots on the lobes, the spots becoming lines toward inside of the tube; tube of the corolla 3.5–5 cm long, 0.7–1 cm broad at the base, bisacciform dorsally, 1.3–1.6 cm at the throat, the limb 5-lobed, 0.8–1 cm long × 7–8 mm wide, margin fimbriate; 4 stamens diadelphous, included, adnate to the base of the corolla tube, 4.4–4.6 cm long, glabrous, anthers broadly ovate, coherent in a square, each 2–4 mm wide, longitudinally dehiscent, the connective glabrous, staminode ca. 5 mm long, pollen tricolpate, colpi 24–29 μm

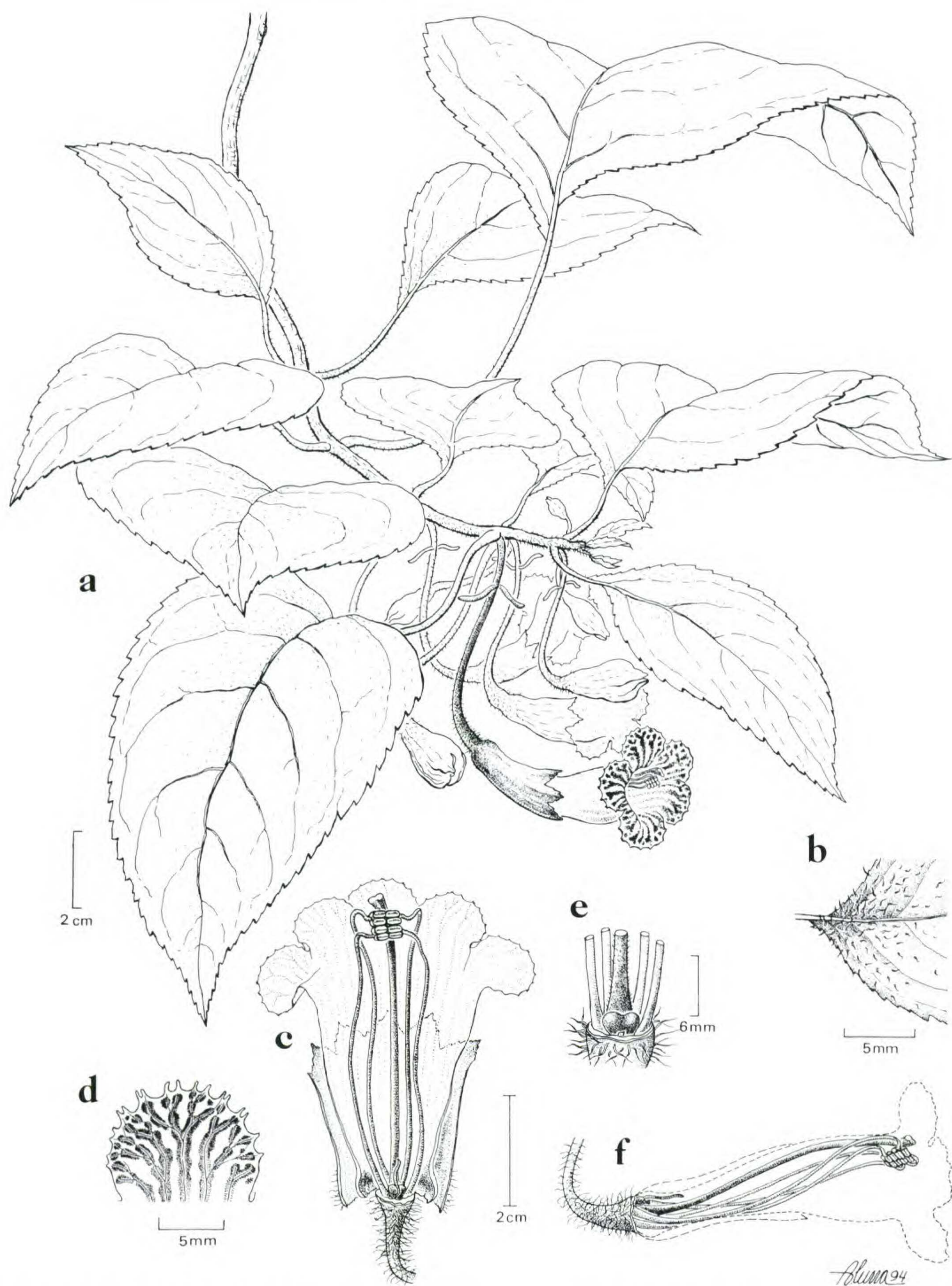


Figure 1. *Solenophora tuxtensis* Ramírez-Roa & Ibarra-Manríquez. —a. Habit showing flowers. —b. Leaf blade base, abaxial surface. —c. Flower opened, showing diadelphous stamens, staminode, disc gland, style, and stigma. —d. Close-up of petal lobe with fimbriate margin. —e. Close-up of bilobed disc gland (staminode removed). —f. Flower, lateral view (calyx and corolla removed). Based on *Ibarra & Sinaca 3533*, MEXU.

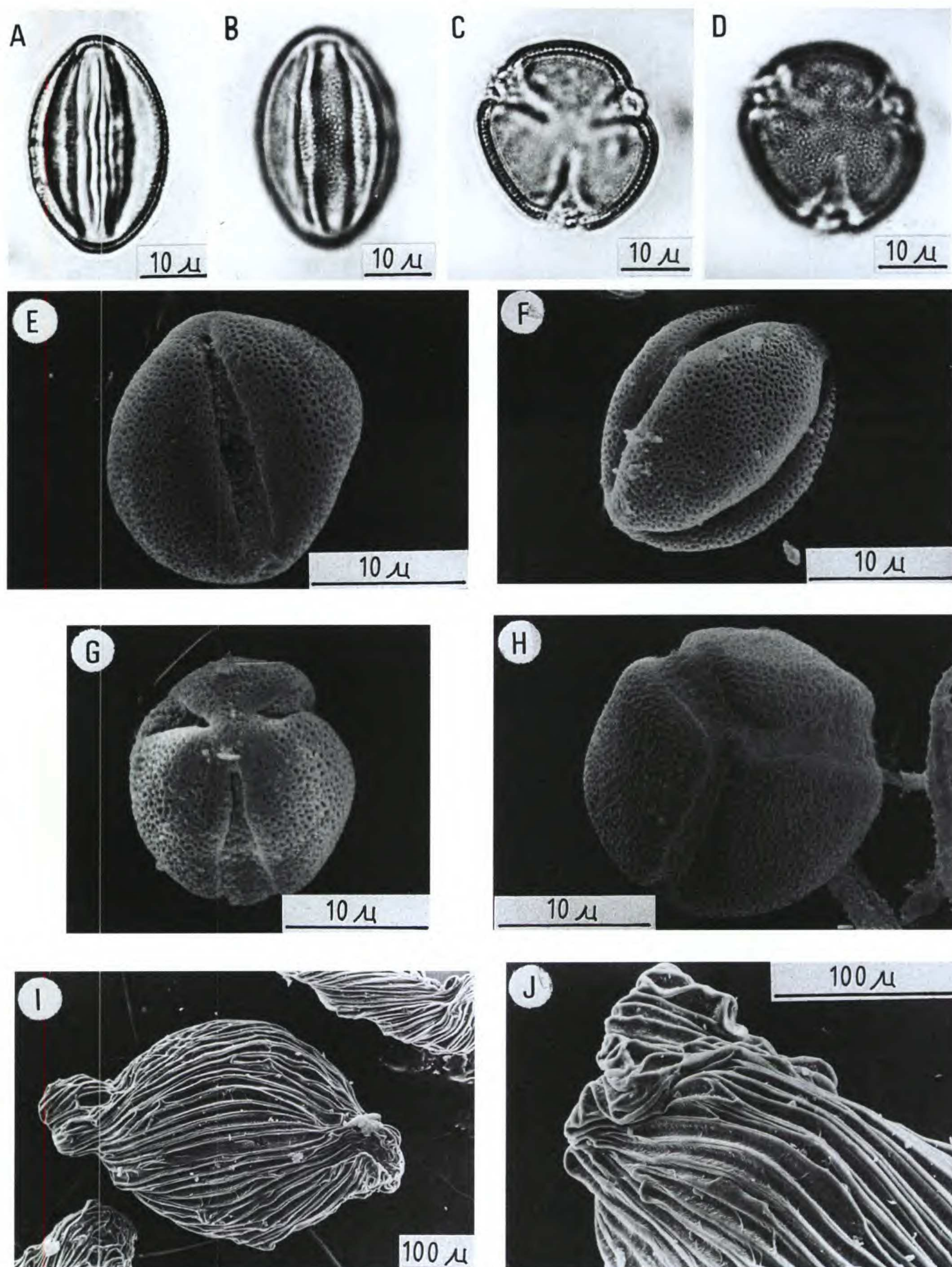


Figure 2. A–H. Pollen of *Solenophora tuxtensis* Ramírez-Roa & Ibarra-Manríquez. A–D. Light microscope photomicrographs of pollen (based on Ibarra & Sinaca 3533, MEXU). (Scale 1 cm = 10 μm). —A. Meridional view. —B. Meridional view. —C. Polar view. —D. Polar view. E–H. SEM photomicrographs of pollen (based on Ibarra & Sinaca 3533, MEXU). —E. Meridional view showing colpus. —F. Meridional view showing two colpi. —G. Polar view. —H. Close-up of mesocolpium and three colpi. I, J. Photomicrographs of *S. tuxtensis* seed (based on Ibarra & Sinaca 3533, MEXU). —I. Longitudinal view of seed showing shape, apex, and ornamentation. —J. Epidermal cells of testa on face and apex (description in the text follows Beaufort-Murphy, 1983).

long, sometimes syncolpate, margins distinct, displaying persistent micro-verrucate colpus membrane (in SEM), exine semi-tectate, 1–1.5 μm thick, sexine micro-reticulate, heterobrochate, lumina $< 1\ \mu\text{m}$, diminishing gradually toward poles and apertures (SEM), sexine/nexine ratio 2:1, prolate, polar axis 26–34 μm , equatorial axis 17–28 μm (Fig. 2A–H); nectariferous disc of 1 dorsal gland bilobed; ovary inferior, apex slightly convex, pilose to tomentose at the apex, reddish, rarely oblong, style terete, 4.5–5.5 cm long, pilose, stigma stomatomorphic, with glandular trichomes. Dry capsule surrounded by the accrescent calyx, 0.8–1.8 \times 0.4–0.7 cm, turbinate, reddish tomentose; seeds numerous, ca. 5 mm long, elliptic, dark brown, apex constricted, cell shape narrowly lineate-polygonate, with edges elevated, crests discrete, face depressed, edges and faces verrucate (Fig. 2I, J). Chromosome number $n = 10$ (Skog, 1984).

Distribution and habitat. The new species is an uncommon plant known only from three municipal areas of Veracruz, Mexico: San Andrés Tuxtla, Catemaco, and Soteapan. It grows on rocks in small rivers, in primary tropical rainforest or cloud forest, at 200–950 m s.n.m.

Reproduction. Flowering is mainly from January to May, fruiting from March to June. Hummingbirds were seen visiting the flowers.

The epithet “tuxtla” suggested by Denham was written on herbarium specimens and labels of living collections. We have changed it to *tuxtlensis* following the Code (Recommendation 60 D.1., Greuter et al., 1994).

Paratypes. MEXICO. **Veracruz:** Municipio Catemaco, entre ejidos Adolfo Ruiz Cortínez y La Perla del San Martín, ca. 15 km al N de Catemaco, 18°31'N, 95°05'W, 950 m, 21 feb. 1972 (fr), *Beaman 5760* (MEXU, US); al N de un poblado a 10 km al SE de Tebanca camino al Bastonal, 19 dic. 1984, *Cedillo 2950* (MEXU); Municipio San Andrés Tuxtla, Estación de Biología Tropical Los Tuxtlas, Lote 71, 18°34'–36'N, 95°05'–09'W, 550 m, 17 feb. 1986 (fl, fr), *Ibarra & Sinaca 2824* (MEXU), 600 m, 1 ago. 1986 (fl, fr), *Ibarra et al. 2975* (MEXU, US); Volcán San Martín Tuxtla, “El Paraje” at edge of small stream, 1500 m, 18 Feb. 1962 (fl), *MacDougall 492* (US); Municipio San Andrés Tuxtla, Estación de Biología Tropical Los Tuxtlas, Lote 71, 18°34'–36'N, 95°05'–09'W, 600 m, 2 abr. 1986 (fl, fr), *Sinaca et al. 521* (MEXU, US); Laguna Azul, 200 m, 20 mar. 1986 (fl, fr), *Sinaca 486* (MEXU, US); Laguna Escondida, 18°35'N, 95°01'W, 200 m, 21 abr. 1985 (fl, fr), *Sinaca & Aparicio 73* (MEXU); Laguna Escondida, 20 abr. 1972 (fr), *Villegas 7* (MEXU, US); Municipio Soteapan, along dirt road 13 km E of Tebanca (13 km E of E side of Lago de Catemaco), 800–950 m, 5 July 1980 (fr), *Nee & Hansen 18768* (MEXU). CULTIVATED: U.S.A. **New York:** Ithaca, grown in the Cornell University Conservatory, as G-911, 23 June 1966 (fl), *Stone 136* (US).

At present it is difficult to relate *Solenophora*

tuxtlensis to other species of the genus. It is distinctive by its long tubular calyx, its tubular corolla with dark purple spots on the lobes, and by having only one bilobed disc gland. A key to distinguish *S. tuxtlensis* from the other species found in Oaxaca and Veracruz is presented:

- 1a. Calyx nearly truncate, lobes 1–2 mm long.
 - 2a. Calyx tubular, base reddish; corolla lobes undulate *S. maculata* D. Gibson
 - 2b. Calyx campanulate, base greenish; corolla lobes fimbriate *S. insignis* (M. Martens & Galeotti) Hanstein
- 1b. Calyx lobulate, lobes 2–8 mm long.
 - 3a. Leaf margins serrate *S. obscura* Hanstein
 - 3b. Leaf margins biserrate *S. tuxtlensis* Ramírez-Roa & Ibarra-Manríquez

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